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Dr. *BLONDET*'s
DISSERTATION
ON THE
Epidemical Diſtemper
AMONG THE
HORN'D CATTLE.

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A DISSERTATION ON THE Epidemical Diſtemper AMONG THE *HORN'D CATTLE:*

WHEREIN,

After giving a ſhort HISTORY of the
ORIGIN, PROGRESS, and NATURE
of that DISTEMPER,

The moſt PROPER MANNER of treating it
is laid down, according to the Principles of
PHYSICK and NATURAL PHILOSOPHY.

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Intendant of the Mineral Waters of *Segrai*,
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Tranſlated from the *French*, publiſh'd at *Paris*
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*Tenenda nobis hæc via eſt, quam Natura præſcripſit,
nec ab illa declinandum: Illam ſequentibus omnia
facilia & expedita ſunt; contra illam nitentibus non
alia via eſt quam contra aquam remigantibus.*
SENEC. Epiſt. 122.

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PREFACE,

BY THE

TRANSLATOR.

A*S the contagious Diſtemper amongſt the Horned Cattle, of which* Europe *in general has of late Years felt the fatal Effects, ſtill continues to rage in ſeveral Parts of this Kingdom, as well as in* Denmark *and other neighbouring Countries, no Apology need be made for the Publication of this Treatiſe on that Subject. The* French *Author, affected with the miſerable Condition to which ſome Parts of his native Country were* *reduced by the Contagion, applied himſelf, like a good Phyſician, to find out the moſt probable Means of putting a Stop to its Progreſs. In order to this, he has thoroughly conſider'd the various Symptoms of the Diſtemper, has cloſely attended to the Efforts of Nature in its different Stages, and from thence has drawn ſuch Inferences as ſeem undeniable, having all along made the Principles of* Natural Philoſophy *the Baſis of his Reaſoning.*

What Reception the Author's Propoſal met with in France, *or whether it was ever put in Execution, the Tranſlator has not been able to learn; but this he hopes he may be allow'd to ſay, that the Scheme appears exceeding plauſible, and well deſerves the Attention of every benevolent and publick-ſpirited*

Perſon, and eſpecially of thoſe of the Faculty, to whoſe Province it more peculiarly belongs: And this is likewiſe the Opinion of an eminent Engliſh *Surgeon, who has peruſed the following Pages.*

It is indeed a melancholy Conſideration, that amongſt all the various Methods of treating this Diſtemper, that have hitherto been propoſed by the Learned, no Expedient has yet been found to put an End to the Calamity. If then there be any Probability of our Author's Scheme being productive of the deſired Effect, it will ſufficiently juſtify our offering it to the Publick in an Engliſh *Dreſs, without which it would not be of ſuch general Service. The Farmer, the Grazier, or any Owner of Cattle, may now read and judge for himſelf: But it* *is to be hoped that our Phyſicians in particular (as was hinted before) will not think it unworthy their Regard, but either give a Sanction to the Author's Propoſal by their publick Approbation of it, or elſe point out ſome more effectual Remedy for the Diſtemper in queſtion.*

—— Si quid noviſti rectius iſtis,
Candidus imperti; ſi non, his utere mecum.
Hor.

S. I.

A DISSERTATION ON THE Epidemical Diſtemper AMONG THE HORNED CATTLE, &c.

CONTAGIOUS Diſeaſes have always been look'd upon as a certain Stumbling-block in the Phyſician's Way, which his Art is at a loſs to remove. Such a prodigious Variety of Symptoms, ſuch ſtrange and unexpected Effects, are obſervable in Diſtempers of that Kind, that they are juſtly deem'd a Scourge of the Almighty, which ſerves at the ſame time as a Puniſhment where it falls, and as a Leſſon of Humility to Mankind.

We felt the fatal Effects of this Rod at the Beginning of the preſent Century, in the Diſtemper among the Cattle, with which the moſt flouriſhing Provinces of *France* have been afflicted.* We ſaw the Deſolation it ſpread in different Parts of the Country, the poor Remains that eſcap'd its Fury, and were Witneſſes of the Conſternation of the miſerable People, ſome overwhelm'd with the Loſſes they had already ſuſtain'd, and others terrified with the Proſpect of thoſe wherewith they were threaten'd.

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* This Diſtemper firſt appear'd in the *Venetian* Territories in the Year 1711, occaſion'd by a Beaſt which ſome Graziers of *Dalmatia* had left upon the Road near *Padua.* The Perſons who found this Beaſt put it into a Cow-houſe, where it ſoon died, and ſo infected the Houſe, that all the Cattle kept there, both Cows and Oxen, were deſtroy'd. The Contagion ſpread itſelf in the neighbouring Country with great Rapidity; it entirely ravaged the *Milaneſe*, and *Piedmont* underwent the ſame Fate; in which Principality there died, in the Year 1714 only, no leſs than Seventy Thouſand Head of Cattle. Nor did *France* eſcape without its Share of this Calamity; for in the Year 1715 the Province of *Dauphiny*, the *Lionnois*, *Burgundy*, the *Orleannois*, and *Alſace*, all equally felt its fatal Effects. *See the Reflections of the Phyſicians of* Geneva *upon this Diſtemper.*

AFTER having been long Spectators of all theſe Calamities, the Rage of the Diſtemper gradually abated, till at laſt it entirely ceaſed, and put an End to the Tears and the Diſtreſs it had occaſioned. As a conſiderable Time paſs'd without any Appearance of its Return, we thought ourſelves perfectly deliver'd from the Calamity, and Joy and Hope had ſucceeded our Grief and terrible Apprehenſions; when on a ſudden, like a *Hydra*, reviving with new Strength when we thought it deſtroy'd, the Contagion broke out again, and has raged for ſome Years paſt in the ſeveral Provinces of this Kingdom. Thus we ſee the ſame Torrent of Miſeries again pouring in upon us, which we have every Day Cauſe to lament, not ſo much on account of what we actually ſuffer at preſent, as from an Apprehenſion that we may yet feel its fatal Effects in as dreadful a Manner as ſome of our Neighbours.*

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* This Contagion alſo ſpread into *England*, where it made great Havock, deſtroying moſt of the Cattle about the Towns and Villages which it viſited. *Holland* was at leaſt an equal Sufferer by it, the Diſtemper having carried off above Two Hundred Thouſand Head of Cattle in that Country.

WHAT an affecting Sight, in reality, is the Loſs of an Animal ſo uſeful in the Buſineſs of Agriculture, and ſo neceſſary for the Support of ſuch a vaſt Number of Families!

TELL us, ye unfortunate Provinces, how much you have ſuffer'd by the Ravages of this Contagion; give us a Detail of your Miſeries; let us know to what a Condition it has reduced you. Or rather, ſay not a Word upon that Head: Your Paſtures deſolate, your Lands uncultivated, your Farms abandon'd, ſufficiently declare your Diſtreſs.

THE Attempts of ſome Phyſicians to give us a clear Idea of this Diſtemper, and to point out the proper Method of treating it, have hitherto proved fruitleſs. Their Endeavours have not had the deſired Effect, and their Diſcoveries have not yet been able to deliver us from this Calamity.

AMONGST thoſe who have enquired into the Cauſe of the Diſtemper, ſome have aſcribed it to the Intemperature of the Seaſons, to a Defect of Perſpiration, or to ſome noxious Quality in the Paſtures:

Others to the Air's being impregnated with peſtilential Corpuſcles, which getting into the Blood, either by the way of Reſpiration, or taken in with the Food, there produce the diſmal Effects we obſerve.

The celebrated *Valiſnieri*, an *Italian* Phyſician, endeavours to reduce this Diſeaſe to a Syſtem he has laid down, that many Diſtempers are produced by Worms. He ſuppoſes, (and the Suppoſition is ingenious enough) that the preſent Diſtemper among the Cattle is occaſion'd by a Multitude of little Worms, which inſinuate themſelves into the Bodies of thoſe Animals; and that the fatal Conſequences, which follow thereupon, are not ſo much owing to the Havock theſe Strangers are able to make, as to the Hoſtilities that enſue between them and the ſmall Worms uſually reſiding in the Bodies of the Cattle, who perceiving a Legion of Enemies coming againſt them, take up Arms to defend their Habitations and repulſe the Invaders. Each ſettled Inhabitant of the Animal attacks a Worm that comes to diſpoſſeſs him; and the Reſult of ſuch an Engagement is the Loſs of the Field of

Battle, which draws after it the Deſtruction of the Victors as well as the Vanquiſh'd *.

OTHERS have attributed the Cauſe of this Diſeaſe to the Conjunction of certain Stars, which are able (ſay they) by a Mixture of their Influences, *to communicate to the Air a certain Corruption, and a malignant Quality, particularly oppoſite to the Conſtitution of theſe diſtemper'd Cattle.* The bare Mention of this Opinion ſufficiently ſhews its Ridiculouſneſs; and a Sentiment ſo abſurd, not founded on any ſolid Principle, and overthrown by conſtant Experience, has no need of Confutation.

IN a Word, every one has form'd a Syſtem according to his Fancy: One will have it, that the Fluids of the Animal are loaded with an alkaline Salt, another ſays it is an Acid; this ſuppoſes them to be diſſolved, another oagulated: And all make uſe of different Remedies, according to the Prejudices they have entertain'd.

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* M. *Logroſſi*, a Phyſician, firſt propoſed this Hypotheſis to M. *Valiſnieri*, who approved of and enlarged it, as it is here repreſented.

Others*, without giving themſelves the Trouble to find out the Cauſe of the Diſtemper, and to conſider its Nature and Symptoms, have made *a choice Collection* of Remedies which a blind Practice has introduced, and which ſome happy Chance has render'd ſucceſsful; imagining that any fantaſtical Medicine, the Uſe of which is by no means warranted, muſt always ſucceed becauſe it has once ſucceeded; whereas its Succeſs ought to be aſcribed to an Effort of Nature, which has ſurmounted both the Diſeaſe and the unnatural Preſcription.

It would be endleſs to repeat the various Sentiments of Authors who have employ'd their Pens on this Subject, and the various Methods they have propoſed of treating this Diſtemper. We find by unhappy Experience, that none of the Remedies yet preſcribed have had the deſired Succeſs, which ſufficiently manifeſts their Uſeleſſneſs, and at once refutes the moſt ingenious Hypotheſes that have been form'd concerning it.

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* The Empiricks.

I DARE not flatter myſelf with Hopes of better Succeſs in an Attempt, wherein ſo many learned Men have miſcarried, *probè ſciens quid valeant humeri, quid ferre recuſent.* The Deſire, however, which every good Member of Society ought to have, of being ſerviceable to his Country, is a Motive ſufficient to induce me to propoſe my Sentiments on this Subject, as I am perſuaded that any thing of publick Concern is not unworthy a Phyſician's Reſearches.

A DESCRIPTION *of the* DISTEMPER *among the* CATTLE.

THE Beaſts attack'd with this Diſtemper do not chew the Cud; they are dull, heavy, dejected, and ſtiff; they hang down their Head and their Ears, their Hair is rough and ſtaring, and their Eyes run with Water. Their Horns and Ears are cold, they are ſeized with a general Trembling, their Legs bend under them, a Fever comes on*, the Roots of their Horns grow warm, their Milk is dried up, their Breath is hot; their Reſpiration is ſhort, quick, interrupted, often accompanied with a violent Cough, and a conſiderable Beating of the Flank; their Skin is puff'd up, and becomes like Shagreen. With theſe Symptoms is frequently join'd a Diſcharge of Matter, ſometimes greeniſh, ſometimes bloody, and always very fetid. They alſo throw out abundance of ſlimy Matter from their Mouth and Noſtrils, and a purulent Liquor runs from their Eyes. Their Tongue is always black or livid, the Outſide of their Noſtrils is very hot, the Inſide dry and overſpread with little red Veſicles with a blue Circle round them; and the Roof and Inſide of their Mouth, which is dry and parch'd, is likewiſe cover'd with Veſicles of the ſame Kind.

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* Though the Symptoms which uſually accompany a Fever do not appear among the Cattle till ſuch

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Time as there is no Room to doubt of the Diſtemper, yet the Fever only becomes more apparent by Degrees, it being actually previous to all the Symptoms abovemention'd, and the very Beginning of this fatal Tragedy. A Perſon will be readily convinced of the Truth of what we advance, by putting his Finger upon the Artery of a Beaſt, even ſome Days before the Diſtemper plainly diſcovers itſelf; for he will find the Pulſe beat quicker than uſual, in which increaſed Velocity of the Blood a Fever conſiſts.

Nor is it an uncommon Thing for Tumours* to riſe in ſome Places, which ſometimes with a ſurprizing Rapidity reach the noble Parts, and occaſion the Death of the Beaſt in leſs than an Hour's time. To all the forementĭon'd Symptoms of this Diſtemper the principal one is to be added, *viz.* its being contagious; for it is communicated by means of Men or Animals that have been amongſt infected Cattle; and even without any apparent Communication it ſpreads itſelf to Places at a great Diſtance from each other †.

THOUGH it be perfectly indifferent what Name we give this Diſtemper, provided it be attended with the Symptoms juſt deſcribed;

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* M. *Herment*, a Phyſician, obſerves, That theſe Tumours never produce their Effects ſo ſpeedily, as when they are about the Cheſt or Head of the Animal.

† This is confirm'd by what M. *Valiſnieri* writes to M. *Lanciſi*, *viz.* That Dogs have carried this Diſtemper from one Country to another: And M. *Boromée* relates, that a Peaſant who had been in a Cowhouſe where the Beaſts were infected, going afterwards into another that was free from the Sickneſs, immediately ſpread the Contagion among the ſound Cattle. We might here add many Obſervations to ſupport our Aſſertion, if daily Experience did not furniſh us with too evident Proofs of its Truth, a Detail whereof would be tedious.

ſcribed; yet the Phyſicians who have handled this Subject are not agreed with reſpect to its Denomination. Some will have it to be a ſimple inflammatory Fever and others (of which Number is M. *Nigriſoli)* affirm it to be a burning and malignant one. Meſſieurs *Lanciſi*, *Valiſnieri*, and *Logroſſi*, carry the Matter farther, and ſay it is a real Plague, peculiar to the Horned Cattle. And laſtly, Meſſieurs *Ramazini*, *Herment*, and *Drouin*, look upon it as a Small Pox with the Purples.

THE numerous Train of Symptoms, that accompany the Diſtemper we are ſpeaking of, has given Riſe to this Multiplicity of Opinions. Every one has diſcover'd ſuch Symptoms as were neceſſary to characteriſe the Diſtemper according to his Fancy, and has made uſe of them to eſtabliſh his own Sentiment, without attending to thoſe which would deſtroy what he advanced. It cannot be denied, for Inſtance, that this Diſtemper is attended with the Symptoms of an inflammatory Fever, as ſome have term'd it; of which the ſhort and quick Reſpiration, the burning Breath, the Panting of the Flank, the

Pulſe ſtronger and quicker than uſual, and the Blood found in the Bowels of Beaſts that have died, are ſufficient Proofs: But the red Veſicles with a blue Circle, that are obſerved within the Mouth and Noſtrils, the livid Tongue, that general Loſs of Strength, the ſlimy Matter iſſuing from the Noſtrils, *&c.* are Symptoms that do not appear in a Fever merely inflammatory. Shall we allow it then to be a malignant Fever? But the Contagion attending this Diſtemper does not accompany a Fever barely malignant. Have thoſe who call it a Small Pox given it a more proper Name? It ſeems to me, that all that has been ſaid in favour of this Opinion * proves no more than that it is attended with a cutaneous Eruption; but it would require great Penetration to determine the Nature of the Poiſon by which it is produced. Beſides, ſeveral Symptoms are obſervable in this Diſtemper, which do not appear in the Small Pox; ſuch is that Species of Carbuncles which come out on divers Parts of the Animal's Body, and

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* See the *Reflections of the Society of Phyſicians at* Geneva *upon the Diſtemper amongſt the Cattle.*

produce ſuch tragical Effects.* Now in order to be ſatisfied whether it is actually a Plague that rages among the Cattle, as ſome believe it to be, it would be neceſſary to agree upon a juſt and accurate Definition of a Plague, which is a Point not yet thoroughly determined. If by Plague we underſtand, with M. *Gillo* and ſeveral others, a Diſtemper that kills almoſt as many as it ſeizes, it follows, that this Sickneſs among the Cattle is ſometimes a real Plague, and ſometimes not ſo, according as it is more or leſs violent, and carries off ſmaller or greater Numbers. We have ſeen both theſe Caſes in *France*, where ſometimes a great many infected Beaſts have recover'd, and at other times almoſt every one has died that was attack'd by the Diſtemper. Should we define a Plague to be "an epidemical contagious Diſtem-
" per, occaſioned by a moſt ſubtil Poiſon
" diffuſed through the Air, which makes
" its Way into our Bodies, and there pro-
" duces Buboes, Carbuncles, Exanthema-
" ta, Purple Spots, and other terrible

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* See the foregoing Deſcription of the Diſtemper, where theſe Tumours are ſpoken of, *p.* 10.

"Symptoms?"* This is not ſufficient to determine the Name of the Diſtemper in queſtion, ſince one Part of the Definition ſuppoſes what is by no means certain, *viz.* that the extremely ſubtil Poiſon, which produces the Diſeaſe, is diffuſed through the Air. We have already obſerv'd, that ſeveral Authors aſcribe the Diſtemper to a noxious Quality in the Graſs, or to an obſtructed Perſpiration; according to which Notions it could not be denominated a Plague, as it would not tally with the Definition thereof. Beſides, the Exanthemata and Purple Spots, which are Symptoms almoſt inſeparable from a Plague, are not manifeſtly obſervable in the Diſtemper among the Cattle; ſince many Authors look upon the Eruptions that appear on their Skin to be Puſtules of the Small Pox, which are very different from Exanthemata and Purples. In fine, as all this Diſpute is about nothing but a Name, the Deciſion whereof is of no manner of Conſequence, we ſhall dwell no longer upon it: And in order to reconcile the different Denominations, and thereby prevent the Objections that might be raiſed againſt me, if I ſhould eſpouſe either one Side of the Queſtion or the other; I ſhall define this Diſtemper *a burning, peſtilential, eruptive Fever.* This Definition will include all the Symptoms that have been the Occaſion of giving it ſo many different Names.

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* See Dr. *Allen's Synopſis of Phyſick*, Vol. I.

Here we muſt ingenuouſly acknowledge, that we are ignorant of the Cauſe of this terrible Diſtemper; and I believe there is nobody ſo bold as to affirm that he has a juſt Idea of it. All that different Writers have advanced on the Subject, is nothing more, as we have ſeen, than weak Conjecture. In this Point therefore let us confeſs our Ignorance, and by ſuch an honeſt Confeſſion we ſhall diſtinguiſh ourſelves from thoſe who are Fools indeed. In the Practice of Phyſick we ought to keep within the Bounds of our Knowledge and Senſes, *naturas rerum manifeſtas indicare, non cauſas indagare dubias.* Let us obſerve the Nature of the Diſtemper; let us carefully conſider its Symptoms, its Progreſs, its Variations and Conſequences;

let us content ourſelves with diligently attending to the Courſe that Nature takes to get rid of the Load which oppreſſes her; let us follow her, Step by Step, in all her different Motions; let us make the beſt Uſe of all theſe various Obſervations, and by that means we ſhall be able to lay down and eſtabliſh ſomething true and certain with reſpect to the Diſtemper in queſtion, much better than by any Hypotheſis, which, how ingenious ſoever, would give little Satisfaction to the Underſtanding, and would lead us away from the Object we ought to have in View. To proceed methodically on ſo obſcure a Subject, a geometrical Order appear'd to me the moſt convenient; and ſuch I ſhall make uſe of in the following Part of this Diſſertation.

PROPOSITION I.

The morbific Matter always tends to ſome particular Part to diſcharge itſelf.

In almoſt all Diſtempers, eſpecially epidemical Contagions, it is obſerv'd that

Nature diſcharges the morbific Matter either by Urine, by Sweat and inſenſible Perſpiration, or by Stool. Theſe three Ways may be conſider'd as ſo many Outlets, whereby Nature uſually diſcharges the various Sorts of Matter that mingle with the Blood, and produce all the Symptoms of the Diſtemper.

It is farther obſerved, that in epidemical Diſtempers of the ſame Kind, Nature has a particular Tendency to one of theſe Ways of Evacuation, as appears daily in the Practice of Phyſic. For Inſtance, the Generality of Fevers in Spring and Autumn are beſt carried off by inducing plentiful Sweats, ſometimes by a conſiderable Diſcharge of Urine, and at other times by an Evacuation of the peccant Matter, either by Vomit or Stool, according to the Place where it is lodged in the greateſt Quantity, and to the Courſe that Nature points out for its Diſcharge.

CONSEQUENCE.

From this Propoſition we ſee the Reaſon why the ſame Remedies have not always the ſame Effect in theſe Diſtempers; why Purgatives are ſometimes better than Sudorifics, and Sudorifics ſometimes better than Diuretics. The morbific Matter, as we ſaid before, particularly inclines to one of theſe Ways of Evacuation. When it throws itſelf out at the Skin, it would be in vain to adminiſter emetic Purgatives. So far from being of Service, they would rather increaſe the Diſtemper; for the violent Irritations thereby raiſed in the Inteſtines would occaſion a greater Secretion of the Humours in thoſe Parts, which would divert the cutaneous Diſcharge of the morbific Matter. The Way to ſucceed in this Caſe would be, by means of ſome gentle Sudorific, to increaſe the Separation of the Humour, to ſtrengthen the Veſſels, to accelerate the Motion of the Fluids, and thereby facilitate their Diſcharge by the Pores of the Skin.

The famous *Sydenham* has laid it down as a Rule, that we ought to have an Eye to the Way that Nature takes to diſengage herſelf from her Burden, that we may be able to aſſiſt her in her Operation: And with that Candour, which real Phyſicians are generally poſſeſs'd of, he acknowledges, that whenever he did not ſtudy the Courſe of Nature in any Diſtemper, he only grop'd in the dark; and that he never could, till he had made the niceſt Obſervations on ſome Diſeaſes, give any Relief to his Patients.

PROPOSITION II.

In the Diſtemper among the Cattle the morbific Matter tends towards the Skin.

THOUGH we are not capable of determining poſitively what is the Cauſe of this Diſtemper, we conceive however, that it muſt be ſome natural Subſtance that produces ſuch a Change in the Body of theſe Animals. But of what Nature is this Subſtance? Why, this is what we do not underſtand; nor is it of much Importance whether we do or not: It ſuffices we know, that whatever Alteration is made is effected by ſome ſuch Subſtance or Body, which we ſhall call the *morbific Matter*; as it is the Cauſe of the Diſtemper,

and

and gives Riſe to all its concomitant Symptoms. This being admitted, it is certain the morbific Matter, whatever it be in this Diſtemper, tends towards thoſe Parts where it leaves the greateſt Impreſſions. Now theſe are no where more viſible than in the Skin of the Beaſt; and for a Proof of what I advance, we need only attend to the following Obſervations.

Firſt OBSERVATION.

MOST of the Cattle attack'd with this Diſtemper have divers Tumours of the Nature of the Carbuncle or Anthrax, which riſe upon their Legs, their Breaſt, and other glandulous Parts of the Skin. What proves that this Swelling of the Glands is produced by morbific Humours is, 1. That theſe Tumours make a very ſwift Progreſs, and are accompanied with very fatal Symptoms. 2. That if the Tumours are brought to a Suppuration, and that be kept up till the morbific Matter is thereby properly diſcharged, the Animal recovers; juſt as it happens in the *Parotides* that accompany malignant Fevers.

Second OBSERVATION.

In diſſecting ſeveral Beaſts that have died of this Diſtemper, little Pimples have been found between the Fleſh and the Skin, according to the Obſervation of M. *Drouin* and many others,* who aſſure us they have alſo ſeen them during the Time of the Diſtemper, while the Cattle were alive.

Third OBSERVATION.

The greateſt Part of the Beaſts that have had this Diſtemper, and got over it, have had the whole Surface of their Body overſpread with a Sort of Itch or Scab, reſembling Miliary Eruptions or the Morphew.

Fourth OBSERVATION.

The Hair of the diſtemper'd Cattle is very looſe, and eaſily comes off; and it has been obſerv'd, that moſt of thoſe that have recover'd have ſhed their Coat. This is occaſion'd either by the Root of the Hair being oppreſs'd by the Quantity of Humours that flow to thoſe Parts, (in which Caſe, being deprived of Nouriſhment, it becomes looſe and ſoon falls off,) or by the Acrimony of the morbific Humour's corroding and deſtroying the Bulb or Root of the Hair, and ſo cauſing it to fall off for want of Nutriment.

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* See the *Journal of Verdun*, for *March* 1746.

CONSEQUENCE.

THE Reſult of all theſe Obſervations is,

1. THAT the morbific Matter tends towards the Surface of the Body, ſince it ſwells the Glands of the Breaſt, the Neck, and the Legs, as mention'd in the *firſt Obſervation.*

2. THAT the ſaid Matter does not only attack the conſiderable Glands, but the whole Skin without Diſtinction; which is proved by the little Pimples that have been found between the Skin and the Fleſh, according to the *ſecond Obſervation*; and by that general Looſeneſs of the Hair, which ſhews that all the Roots of it, interſpers'd throughout the Skin, are attack'd by the Diſtemper.

REMARK*.

As it is plain from the preceding Obſervations, that Nature chuſes the Way of the Skin to rid herſelf of the morbific Matter, all that we have to do is to aſſiſt her in her Endeavours, and to act in Concert with her, by means of ſuch Remedies as are capable of diminiſhing thoſe Obſtacles ſhe may meet with in the Courſe of her Operations.

PROPOSITION III.

Thoſe Remedies which are capable of augmenting the Excretion of the cutaneous Humours, are the Remedies indicated in the Caſe before us.

Since the morbific Matter tends towards the Skin, as has been proved according to the *ſecond Propoſition*, we ought to uſe our utmoſt Endeavours to facilitate its Diſcharge. Now I ſay, that in order to obtain this End, the Remedies that are capable of promoting the Excretion of the cutaneous Humours are indicated in the preſent Caſe; becauſe by that means we ſhall not only facilitate the Diſcharge of the Sweat and Perſpiration, (the ordinary Excretions of the Skin) but alſo that of the morbific Matter, which has been thrown upon the Miliary Glands, and which has likewiſe fill'd the Veſſels of the Skin.

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* Perhaps it had been more proper, in a Work wherein a geometrical Order is obſerv'd, to have uſed the Term *Scholium* inſtead of *Remark*, and that of *Corollary* inſtead of *Conſequence*: But as thoſe Words are not much in Uſe except amongſt Mathematicians, and might ſpread a Veil of Obſcurity over a Work intended to be of general Benefit, I thought it more convenient to ſubſtitute the Term *Remark* in the room of *Scholium*, as the Remarks will anſwer

PROPOSITION IV.

There are two Ways of augmenting the cutaneous Diſcharge, either by increaſing the Force of the Heart, or by diminiſhing the Reſiſtance that is made to it.

In order to prove the firſt Part of this Propoſition, *viz.* that one Way of augmenting

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the ſame Purpoſe, *viz.* that of illuſtrating the Propoſitions juſt before proved; and alſo the Term *Conſequence* inſtead of *Corollary*, as it will ſignify the ſame Thing, namely, a Propoſition that follows from another which has been juſt demonſtrated.

menting the cutaneous Excretion is by increaſing the Force of the Heart, we need only conſider, that Sweat and the Matter of Perſpiration are diſcharged out of the Body by the Contraction of the Heart, whereby the Blood is puſh'd to the Extremity of the excretory Veſſels of the Skin. Now it is certain, that the greater the contracting Force of the Heart, in ſo much the greater Quantity will the Fluids be carried towards it, with ſo much the more Strength will they be puſh'd back again, and conſequently the Humours will be ſecreted in greater Abundance.

It is equally certain, that a Diminution of the Reſiſtance made to the Motion which throws the Humours towards the Surface of the Body, is another Means of augmenting the cutaneous Excretion; for every thing that reſiſts that Motion makes it leſs, and conſequently prevents the Humours from being carried to the Extremity of the excretory Veſſels of the Skin, and thereby diſcharged. From hence therefore it plainly follows, that if the Reſiſtance be diminiſh'd, the Fluids will be carried to the Skin in greater Quantity,

and

and the Diſcharge of the cutaneous Humours will be more conſiderable: Which was the Point to be proved.

REMARK.

It is certain, that the Reſiſtance which the Humours have to ſurmount in their Circulation is every where very great, both on account of the Friction they undergo againſt the Sides of the Veſſels, and of the various Windings of thoſe Veſſels wherein they circulate.

This Reſiſtance, however, is no where greater than in the Skin; for in reality,

1. The Diſtance of the Heart from the Skin being greater than from any other Part, the weakeſt Oppoſition there is more conſiderable than it would be any where elſe, becauſe the Humours have but little Motion there to overcome the Reſiſtance.

2. An Oppoſition is alſo made by the Skin itſelf, which in the horned Cattle is of a very compact Texture, and by the Fibres whereof it is compoſed, which of themſelves are very hard and ſtiff, and are kept extended by the Hair, the Roots whereof traverſe the whole Skin, and ſerve

as ſo many little Nails to keep the Fibres faſt together.

3. THE Atmoſphere, which continually preſſes upon the Surface of the Animal's Body with a Weight equal to ſeveral thouſand Pounds, makes a Reſiſtance that much retards the Motion of the Humours in thoſe Parts, the Diminution of which Reſiſtance muſt neceſſarily be attended with Advantage.

PROPOSITION V.

The Method of augmenting the cutaneous Excretion, by increaſing the Force of the Heart, does not ſeem to be the beſt; that of diminiſhing the Reſiſtance appearing much more preferable.

ALL Natural Philoſophers agree, that a too ſlow or a too rapid Motion is equally repugnant to the Secretion of the Juices, for which Purpoſe a certain Degree of Motion is neceſſary. This Principle once eſtabliſh'd, I ſay the cutaneous Secretion will not be augmented in the

preſent

preſent Caſe by means of Remedies that increaſe the Force of the Heart, as it will by leſſening the Reſiſtance; for the Humours being before in no ſmall Agitation, and the Force of the Heart and Arteries being already very great, on account of the Fever the Cattle are in, it is certain that an Augmentation of that Force will alſo augment the Motion of the Humours, and thereby they will be farther rarified, ſo as to poſſeſs a larger Space, and diſtend the Veſſels to ſuch a Degree as to render them incapable of re-acting upon the Fluids, not only for the Diſcharge of the morbific Matter through the Skin, but even to continue their Circulation. Hence general Stagnations of the Humours, the Viſcera fill'd with Blood, *&c.*

THESE ill Conſequences are not to be fear'd from the ſecond Method propoſed. Since the Buſineſs in the preſent Caſe is not ſo much to put the Humours in Motion, as to remove the Obſtacles that oppoſe their Diſcharge, (as we have demonſtrated) it is certain a Diminution of ſuch Reſiſtance is a Method far more adviſable. We have ſeen, in the Remark on the fourth Propoſition, how great that Reſiſtance is, and that it is very prejudicial to the free Diſcharge of the cutaneous Humours; the Diminution therefore of ſuch Obſtacles cannot fail of being extremely ſerviceable.

REMARK.

It is therefore the leſs ſurprizing, that the Cordials and Sudorifics uſually given to the diſtemper'd Cattle, in order to throw the morbific Matter out of the Body, do not produce the expected Effects. There happens in this Caſe, what we have juſt now obſerved in the firſt Article of the fifth Propoſition, *viz.* theſe Remedies augment the Motion of the Humours, and rarify them ſo much that they diſtend the Veſſels to ſuch a Degree, as to be no longer capable of re-acting upon the Fluids: Then the Circulation of the Humours ceaſes, the Blood ſtagnates, the over-diſtended Veſſels burſt; and hence thoſe internal Inflammations, thoſe extravaſated Humours, thoſe gangrened Viſcera, that we find upon opening their dead Carcaſes.

CONSEQUENCE.

From what we have demonſtrated in the foregoing Propoſitions, it follows, that the chief Obſtacle which hinders the free Diſcharge of the morbific Matter through the Skin, (in the Horned Cattle) is the compact Texture of that Part, and the Tenſion and Hardneſs of the Fibres of which it is compoſed. *See the ſecond Article of the Remark on the fourth Propoſition.*

To the principal Obſtacle we have added another, *viz.* the Preſſure of the Atmoſphere upon the Body of the Animal, which we have ſaid is equal to a Weight of ſeveral thouſand Pounds; and this we ſhall demonſtrate in the following Propoſition.

PROPOSITION VI.

To determine the Weight that an Ox, or any Beaſt of the ſame Bulk, ſuſtains by the Preſſure of the Atmoſphere, when the Mer-

cury is at twenty-ſeven Inches and a half, the ordinary Height to which it riſes in the Barometer.

THAT the Air gravitates, is a Truth eſtabliſh'd by numerous Experiments; and conſequently it preſſes upon all Bodies that are under it: A Propoſition no leſs true than the firſt, but which requires to be fully explained.

THE Weight ſuſtain'd by theſe Animals is equal to a Priſm * of Air, whoſe Baſe is equal to the Superficies of their Bodies. Now a Priſm of Air of the Height of the Atmoſphere is equal to a Priſm of Mercury of the ſame Baſe, † and twenty-ſeven Inches and a half high; ſo that each Foot ſquare of the Superficies of their Bodies is preſs'd by a Weight of Air equal to a Maſs of Mercury whoſe Baſe is one Foot ſquare, and whoſe Height is twenty-ſeven Inches and a half. The Weight of a Foot ſquare of Mercury then being 1064 Pounds *, it follows, that each Foot ſquare of the Superficies of an Ox or other Beaſt is preſs'd upon by a Weight of Air equal to 2438 lb. and one Third; for a Maſs of Mercury whoſe Baſe is one Foot ſquare, and twenty-ſeven Inches and a half high, contains two cubical Feet $\frac{1}{4}+\frac{1}{24}$ of Mercury, which are equal to $2438\frac{1}{3}$ lb. † the Weight ſuſtain'd by every Foot ſquare of the Surface of the Animal: And as the Superficies of an Ox contains 35 ſquare Feet, (as I myſelf have meaſured it) in order to know the whole Weight the Beaſt ſuſtains, we have only to multiply $2438\frac{1}{3}$ lb. by 35, and the Product will be 85342 lb. || which

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* A Priſm is a Body of an equal Bigneſs from one End to the other, and whoſe oppoſite Baſes are perfectly equal.

† It is known that the uſual Height to which the Mercury riſes in the Barometer is twenty-ſeven Inches and a half. This Elevation is occaſion'd by the Weight of the Air, with which the Mercury at that Height is *in Equilibrio*. Now, as Bodies in that State are of an equal Weight, it follows, that the Column of Air which gravitates upon the Mercury is equal to the Maſs of Mercury which it cauſes to aſcend.

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* Water being to Mercury as 1 to 14, and the Weight of a cubic Foot of Water being found by the Experiments of *Galtillié* to be 76 Pounds, I have the following Proportion, 1 : 14 :: 76 : 1064.

† $1064 \times 2\frac{1}{4} + \times \frac{1}{24} = 2438\frac{1}{3}$ lb.

|| According to accurate Computation, $2438\frac{1}{3}$ lb. × 35 = $85341\frac{2}{3}$ lb.; but as $85341\frac{2}{3}$ lb. is nearer to

is the Weight ſuſtain'd by an Animal whoſe Superficies is 35 Feet ſquare, when the Mercury is at twenty-ſeven Inches and a half: Which was to be demonſtrated.

CONSEQUENCE I.

By this Demonſtration it appears, what an enormous Weight theſe Animals ſuſtain; and this Weight will be ſo much the greater, as their Surface is of greater Extent. A Man, whoſe Superficies is only fifteen ſquare Feet, according to the Obſervation of *Nieuwentit*, will ſuſtain a Weight much leſs conſiderable; for inſtead of multiplying $2438\frac{1}{3}$lb. by 35, the Surface of an Ox, we are to multiply the ſame Number by 15, which will only produce 36575 lb the Weight ſuſtain'd by the Body of a Man when the Mercury is at twenty-ſeven Inches and a half; and yet this is a much greater Weight than People are apt to imagine.

85342 lb. than to 85341 lb. I have not regarded the Fraction, which is of little Signification, and for the ſake of a round Sum have added the Third that was wanting to make up a whole Number.

CONSEQUENCE II.

THE Weight which the Body of theſe Animals ſuſtains is likewiſe different according to the different Height of the Mercury; for, as we have ſhewn in the ſixth Propoſition, the Weight which a Beaſt ſuſtains by the Preſſure of the Atmoſphere is equal to a Priſm of Mercury, the Baſe whereof is equal to the Superficies of his Body, and the Height twenty-ſeven or twenty-eight Inches, which is its ordinary Variation *: And it is certain the Priſm

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* Though the Variation of the Mercury in the Barometer is ſeldom more than an Inch, *viz.* from 27 to 28; yet M. *Poliniere* has obſerv'd it ſometimes fall to 26 Inches $\frac{1}{4}$, and ſometimes riſe to 27 Inches $\frac{3}{4}$; and that the Difference between its leaſt and greateſt Height was about two Inches. (See his *Philoſophical Experiments.*) From whence it follows, that the Body of a Man, who undergoes theſe Variations of the Atmoſphere, ſupports ſometimes a Weight of 2660lb. more than at other times, according as the Mercury is at its greateſt or its leaſt Elevation.

The Variation of the Mercury (and conſequently that of the Air which cauſes it) is much more conſiderable in *England*; for Dr. *Wainwright* and Dr. *Quinſey* obſerve, that the Difference between the leaſt and the greateſt Height of the Mercury is three Inches, *viz.* from 27 to 30. From whence they conclude, according to their Calculation, that a Man's Body ſuſof Mercury will weigh leſs when its Baſe is the ſame and its Height only twenty-ſeven Inches, than when it is twenty-eight. Now this Variation makes a very conſiderable Difference in the Weight which the Cattle ſuſtain at different Times; for a Beaſt, whoſe Superficies is thirty-five ſquare Feet, ſuſtains a Weight of Air equal to 83790 lb. when the Mercury is at twenty-ſeven Inches, and to 86894 lb. when it riſes to twenty-eight; ſo that they ſometimes ſuſtain 3104 lb. more, and ſometimes ſo much leſs, according as the Mercury is at twenty-ſeven or twenty-eight Inches.

CONSEQUENCE III.

If the Weight ſuſtain'd by the Cattle be greater or leſs, according as the Air is

tains a Weight of 3982 lb. more at one Time than at another, according as the Mercury is at 27 Inches, its leaſt Elevation, or at 30, its greateſt. The Effects of ſuch a vaſt Alteration muſt needs be ſenſibly felt by the human Body; the Truth of which Aſſertion will always be warranted by thoſe who are troubled with an Aſthma or any Diſorder of the Breaſt or Lungs, by Perſons of a plethoric Habit, and by thoſe who are ſubject to Rheumatic or Sciatic Pains.

more or leſs heavy, one Means of relieving them from the Burden they ſupport is to diminiſh the Preſſure of the Atmoſphere; ſo that all our curative Indications are reduced to theſe two Things:

1. To relax and ſoften the Fibres of the Skin, which are ſtrongly and cloſely interwoven together.

2. To diſburden the Animal of Part of the enormous Weight of the Atmoſphere.

In order to anſwer the firſt of theſe Indications, nothing appears to me more proper than to put the Animal into a Sort of Bagnio, which may be thus contrived. Let a Hole or Pit be dug in the Ground, three Feet in Breadth, five in Length, and two in Depth; in which let there be placed three large earthen Pans, of about eighteen Inches Diameter, each upon an Iron Trevet. On the Outſide let three Openings be made, one anſwering to each Trevet, through which Fuel may be convey'd as there is Occaſion, and the Air admitted into the Pit to keep the Fire alive. The three Pans are to be fill'd with Water, and a Fire of Coals or Wood to be lighted under them, by means of the Openings above-mention'd. Let the Pit be cover'd with a wooden Grate or Lattice, and over that let a Hut or Hovel be erected, ſix Feet in Length, and four in Breadth. This Hut muſt have a Back-door, to be open'd and ſhut at pleaſure, through which the Beaſt is to enter; and another Door at the oppoſite End to go out at. A Hole muſt likewiſe be contrived at the ſame End for the Beaſt to put out his Head, that he may breathe the open Air, and not the hot and moiſt Air within the Hut. Every thing being thus prepared, let the diſtemper'd Beaſt be turn'd into the Hut at the Back-door; and his Head being put out at the Hole contrived for that Purpoſe, let him be faſten'd by the Horns in the moſt convenient Manner for keeping him in the ſame Situation; after which let great Care be taken to ſtop up with Blankets every Hole that might give Admiſſion to the external Air. In this Situation let the Beaſt remain two Hours, or longer if there be Occaſion; always taking care to feed the Fire, and keep the Water boiling. At the Expiration of that Time let him be cover'd with Blankets well warm'd, and led back to his Stall; and after the Operation it will be requiſite to give him half an Ounce of Orvietan or *Venice* Treacle in a Pint of old Wine, in order to repair in ſome meaſure the Loſs of Strength and Spirits he has ſuffer'd by Sweating, that ſo Nature may have Vigour enough to throw off the morbific Matter through the Pores of the Skin, which have been thus dilated.

ADVANTAGES *ariſing from this* HOVEL.

HAVING proved in the fifth Propoſition, that the beſt Method of facilitating the cutaneous Excretion is to diminiſh the Reſiſtance of the Skin, either by relaxing the Fibres, or ſoftening the Parts that are too hard; let us ſee whether theſe Ends are anſwer'd by means of this new Bagnio, and whether we can draw from it the Advantages propoſed.

THE Beaſt, in the Situation we have placed him, may be conſider'd as in a Bath of Vapours; for the Water continually evaporating by the Heat of the Fire, will diffuſe itſelf through the ambient Air in the Hovel, and the Vapours will render it warm and moiſt. By this Warmth and Humidity the Fibres of the Skin, which were hard and ſtiff, will be ſuppled and relax'd, and will make leſs Reſiſtance to the Humours, which will therefore circulate more freely in thoſe Parts: Beſides this, the Pores, or (if you chuſe to call them ſo) the excretory Veſſels of the Skin, will be dilated by the Heat; the Humours will have a freer Exit through them; and the morbific Matter, which is of too groſs a Nature to paſs through Orifices of ſo ſmall a Diameter, finding the Paſſages widen'd, will diſcharge itſelf with greater Eaſe.

THE ſecond curative Indication will be anſwer'd by the Uſe of Cupping-Glaſſes. We know that by their means the Weight of the Air is diminiſh'd, either by pumping out the Air contain'd in the Veſſel by a Syringe, or rarifying it by burning Tow, &c. within its Cavity. They are to be applied either *dry* or *wet*, according as may be found neceſſary; that is, ſometimes with and ſometimes without Scarification. Beſides, they will be very requiſite to be applied where any of the Tumours appear that make ſuch a rapid Progreſs, in order to cauſe a quicker Diſcharge of the morbific Matter, which is there lodged in greater Abundance than in other Parts: And it is proper to apply them to ſeveral Parts of the Body indiſcriminately, to facilitate the more immediate Evacuation of the ſaid Matter. But in what Manner ſoever they are applied, let as many be put on as poſſible, becauſe the more they are in Number, the more will the Weight be diminiſh'd which the Beaſts ſuſtain by the Preſſure of the Atmoſphere. We are now to ſhew what Benefit the Cattle will reap from the Application of Cupping-Glaſſes, after having firſt deſcribed the Way of applying them, and their Manner of Operation.

TAKE a Cupping-Glaſs of a proper Size, and chuſe ſuch a Place to apply it, as that every Part of the Edge of the Glaſs may touch the Skin of the Beaſt, ſo that the exterior Air can have no Communication with that incloſed in the Cavity of the Veſſel. Then fill the Cupping-Glaſs half full of Tow, and ſet it on fire, and while the Tow is burning apply the Veſſel to the Part intended. The Flame being then extinguiſh'd, the Skin underneath the Glaſs is ſwell'd up by the Flux of the Humours to that Part; and this is what we call *dry* Cupping. If the *wet* Sort is required, after the Cupping is perform'd as above, the tumefied Skin is to be ſcarified, and the Cupping-Glaſs re-applied to the Part, proceeding in the Manner we have juſt directed.

THE Deſign of Cupping is to diminiſh, as we ſaid before, the Preſſure of the Atmoſphere upon the Body of the Animal, and to occaſion a greater Reſort of Humours to thoſe Parts. Now this Effect is really produced by the ſaid Operation; for by burning Tow in the Cupping-Glaſs the Air contain'd therein is rarefied, and being cloſely ſhut up by the Application of the Veſſel to the Skin, the Flame is immediately extinguiſh'd, and conſequently the Rarefaction it occaſion'd ceaſes. The external Air then cooling the Surface of the Veſſel, the incloſed Air is condenſed and reduced to a leſs Space, whereby it loſes ſome of its Strength and

Elaſticity, and being no longer of an equal Denſity with the external Air, it preſſes with leſs Force upon the ſubjacent Parts; and the neighbouring Parts ſuſtaining a greater Preſſure from the external Air, the Humours flow to the Place where they find the leaſt Reſiſtance, and raiſe up the Skin underneath the Cupping-Glaſs, ſo that the morbific Matter will be there diſcharged, and the Animal thereby relieved.

Now to determine preciſely how much the Weight of Air ſuſtain'd by the Cattle will be diminiſh'd by the Operation of Cupping, I have made the following Experiment.

EXPERIMENT.

Having burnt ſome Tow in a Pot of eight Inches Diameter, and ſix Inches deep, of a pyramidal Shape, ſomewhat reſembling that of a Cupping-Glaſs, I put my Barometer through a Hole I had made in the Bottom of the Pot*, in order to take in ſome of the Air incloſed in this Kind of *Cucurbitula*, having cloſely ſtopp'd every Paſſage that might admit the external Air into the Veſſel. In this Situation I left the Barometer a ſufficient Time to fill itſelf with the warm Air incloſed; after which I cloſed up as quick as poſſible the little Branch of the Barometer, and remov'd it into the open Air. The Conſequence was, that the Air contain'd in the Barometer being no longer dilated by the Heat of the Tow burnt in the Veſſel, was now condenſed by the ambient Air, its Spring and Expanſion leſſen'd, and the Mercury thereby forced to deſcend two Inches and a half, ſo that it ſtood no higher than twenty-five Inches above its Level.

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* It is to be obſerv'd, that the Pot was turn'd upſide-down, and conſequently the Bottom of it was uppermoſt.

REMARK.

THE Effects in this Experiment are the ſame as in the Uſe of the Cupping-Glaſs; for, 1. The Air that was contain'd in the Barometer underwent the ſame Degree of Rarefaction as that incloſed in the Cupping-Glaſs, ſince it was with the ſame

Sort of Air that the Barometer was fill'd. 2. Whatever Effect the external Air had upon that in the Barometer, the ſame it has equally upon the Air incloſed in the Cupping-Glaſs; ſo that the Air of the Cupping-Glaſs and that of the Barometer are of an equal Denſity. And as it appears from the Experiment aforeſaid, that the Air contain'd in the Barometer cauſed the Mercury to aſcend no higher than to twenty-five Inches, we muſt thence conclude that the Air incloſed in the Cupping-Glaſs is only of ſuch a Denſity as to raiſe the Mercury to the ſame Height, or ſcarce ſo high; ſince it is not poſſible, let the Experiment be made with ever ſo much Accuracy, to prevent the Communication of the external Air with that in the Barometer, at leaſt for ſome Moments; which is a Thing that does not happen to the Air incloſed in the Cupping-Glaſs.

CONSEQUENCE I.

How much then will the Weight ſuſtain'd by the Animal be diminiſh'd? This we ſhall determine in the following Manner. We have proved, (*Propoſition* VI.) that when the Mercury ſtands at twenty-ſeven Inches and a half, each ſquare Foot of the Superficies of the Body is preſs'd upon by a Weight of Air equal to $2438\frac{1}{3}$ lb. When the Mercury therefore is at twenty-five Inches, each Foot ſquare will only ſuſtain a Weight of Air equal to $2216\frac{2}{3}$ lb. For, as we have ſeen in the ſecond *Conſequence* of the ſixth *Propoſition*, the Weight ſuſtain'd by the Cattle varies according to the different Elevation of the Mercury; becauſe the Weight that preſſes upon each ſquare Foot is equal to a Priſm of Mercury of the ſame Baſe, and of the ſame Height to which the Mercury aſcends in the Atmoſphere incumbent upon the Bodies of thoſe Animals. (See *Propoſition* VI.) Conſequently, each ſquare Foot of the Superficies of a Beaſt will at that Time ſuſtain no more than $2216\frac{2}{3}$ lb. which being ſubſtracted from $2438\frac{1}{3}$ lb. the ordinary Weight ſuſtain'd by each Foot ſquare, there will remain $221\frac{2}{3}$ lb. of which Weight each ſquare Foot of the

Animal will be diſburden'd by Cupping. Now if we ſuppoſe that all the Cupping-Glaſſes applied to the Body of a Beaſt cover only ſix ſquare Feet out of thirty-five, which the Superficies contains, the Animal will by this means be diſcharged of 1330lb. But if the Mercury ſhould deſcend lower than twenty-five Inches, it is evident the Beaſt would be freed from a Weight ſtill more conſiderable; which I think I have made appear towards the End of the foregoing Remark.

CONSEQUENCE II.

Some Parts of the Animal's Body being relieved from ſo great a Preſſure, the Humours will flow thither more copiouſly, becauſe the Veſſels of thoſe Parts will be leſs compreſs'd than they were before; every Column of Air being diminiſh'd will gravitate leſs upon the Orifices of the excretory Veſſels; the Fluids therein contain'd will have leſs Reſiſtance to ſurmount in the Way of their Diſcharge; and the morbific Matter will therefore be more eaſily evacuated. All theſe good Effects may be produced by Cupping without Scarification; but the other Method will be ſtill more advantageous, as it operates by pumping out (as one may ſay) the morbific Matter contain'd in the Veſſels of the Skin, according to the Laws of Suction; and the Benefits attending it will be nearly the ſame as thoſe that enſue from ſucking a Wound.*

ACCORDING to the Principles laid down in this Diſſertation, it will be eaſy to underſtand whether the different Remedies made uſe of in the preſent Diſtemper among the Cattle can be attended with Succeſs; ſuch as Frictions, Fumigations, Cathartics, Bleeding, Sudorifics and Cordials, Setons and Cauſtics.

THAT we may be able to determine theſe Points, it is neceſſary to remember what we have proved in the Courſe of this Diſſertation, *viz.* that the Cauſe of this Diſtemper is a certain peccant Matter, which, being mix'd with the Humours, produces the Symptoms we obſerve, and which Nature endeavours to diſcharge by the Pores of the Skin. From this Principle flow the following Conſequences.

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* This is what the common People in *France* call *panſer du ſecret.*

CONSEQUENCE I.

FRICTIONS are excellent in the preſent Caſe, but not thoſe with Straw dipp'd in Oil, which ſome recommend: 1. Becauſe the Oil, by ſtuffing up the Pores of the Skin, will rather obſtruct than promote the cutaneous Excretion. 2. Becauſe the Straw is not a Body ſtrong enough to cleanſe the Skin thoroughly from the Filth that may be gather'd upon it, and which, by ſtopping the Orifices of the excretory Veſſels, may prevent the free Diſcharge of the morbific Matter.

To anſwer the curative Indications in this Diſtemper, I would adviſe the Uſe of a Curry-comb; for ſuch Frictions would not only cleanſe the Skin, but by continuing them for ſome Time, or by making them ſomewhat harder than uſual, a ſlight Inflammation would be raiſed upon the

Skin, which would cauſe the Humours to reſort thither more copiouſly, and there form a Sort of general Defluxion. This is a Method of curing many Diſtempers, which was much uſed by the Ancients, and that with Succeſs: They did a little Evil, to obtain a great Good; and one cannot help blaming the Moderns for not following their Example. Frictions then, of conſequence, not only may but ought to be employ'd; and that, in my Opinion, previouſly to ſweating the Animal in the Bagnio above deſcribed.

CONSEQUENCE II.

FUMIGATIONS with ſtrong Herbs would alſo be of ſome Service, by burning them in the Pans that are uſed to boil the Water, as the oily and aqueous Particles evaporated from them would relax the Fibres of the Skin*. But, beſides that the aqueous Particles hence ariſing will not be ſo numerous as they are in the Vapour of the boiling Water, and conſequently have a leſs Effect, the aromatic Particles evaporated from the Herbs being of a ſharp Nature may irritate the Orifices of the excretory Veſſels of the Skin, and cauſe them to contract, and thereby obſtruct the Diſcharge of the morbific Matter; which not being to be apprehended from the Vapours of the boiling Water, this Method muſt be allowed the Preference.

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* The Reader will underſtand that I mean theſe Herbs ſhould be green; for otherwiſe, if they are burnt when dried, ſo far from ſoftening the Skin, it will be made more dry and hard, which is the Caſe of all Bodies that are expoſed to the Smoak of a common Fire.

CONSEQUENCE III.

THE Bleeding made uſe of at the Beginning of this Diſtemper may alſo have its Advantage, by diſcharging ſome of the peccant Matter that infects the Maſs of Blood; provided it be practiſed with ſuch Diſcretion as to leave Nature ſufficient Strength to throw off the Load that oppreſſes her.

CONSEQUENCE IV.

As Cathartics excite a Diſcharge of the morbific Humour by other Paſſages than Nature prepares and points out, they muſt be look'd upon as prejudicial, becauſe they act in a Way contrary to that of Nature, to aſſiſt whoſe Operation ought to be our principal Care in any Diſtemper.

CONSEQUENCE V.

Sudorifics and Cordials ought not to be uſed but with the greateſt Caution. We have ſeen, in the fifth *Propoſition,* what Miſchiefs they are capable of producing in the preſent Caſe. It is ſuppoſed indeed that they muſt be ſerviceable, as they operate by throwing the Humours towards the Skin; but as they meet with a Reſiſtance in that Part too great for them to ſurmount, on account of the Hardneſs and Thickneſs of the Skin, they only ſerve to agitate the morbific Humour, without producing any good Effect: So that if they were to be uſed at all, it would be when the diſtemper'd Beaſt is in the Bagnio, the Reſiſtance that obſtructs their Operation being then diminiſh'd.

CONSEQUENCE VI.

The Veſicatories, Cauſtics, Setons, and Scarifications employ'd in this Diſtemper, are excellent Remedies, from whence great Advantages may be drawn. We thereby act in the Way of Nature, and by ſeveral Means aſſiſt her in her Operations. She herſelf has thrown the morbific Matter to the exterior Parts of the Animal, (See the *ſecond Obſervation)* the Hardneſs of the Skin prevents her from puſhing it farther, and ſhe is not able to overcome this Oppoſition; by one of theſe Methods then we open her a free Paſſage, through which ſhe may diſcharge the Humour that infected the Maſs of Blood.

Such are the Remedies, in my Opinion, the moſt proper to attain the End we have had ſo long in View. Happy ſhould I think myſelf, if my Labours ſhould be attended with the deſired Succeſs. I hope, however, that though the Effects may not be anſwerable to the Expectations I have conceiv'd, my Endeavours will be nevertheleſs kindly accepted; for if I have not hit upon the Truth in every Reſpect, what I have done may perhaps make it the eaſier to be found by others; in which Caſe I ſhall freely give up the Honour of the Diſcovery to the Service of the Publick, extremely happy in having contributed thereto, though ever ſo little.

Nota Bene.

My Propoſal of a Hut or Hovel has appear'd to many People very difficult to be put in Execution, as well on account of its Structure, as of the Expence wherewith they ſuppoſe the erecting it would be attended.

In order to remove theſe imaginary Difficulties, I have, with the Aſſiſtance of proper Workmen, made a Computation of the Expence this Project would require, and find that it would not exceed forty or fifty Shillings Sterling. Now as the laying out ſo ſmall a Sum would ſerve a whole Town or Village, this is the cheapeſt Method yet found out of relieving the diſtemper'd Cattle; for ſcarce one of them hitherto but what has coſt a Piſtole at leaſt before its Death, in *Venice* Treacle, Univerſal Powder, and other Drugs.

THERE is no Neceſſity for every private Man to build ſuch a Hovel; for if that were the Caſe, but few Perſons would be able to come at the Remedy. It is ſufficient that one be erected in every Village at a publick Expence, which will be but a Trifle for each Individual. This would ſerve as a Common Bagnio, to which every Inhabitant might bring his diſtemper'd Beaſts, and, after they had ſtay'd in it a requiſite Time, drive them back again to their Stalls, taking care to cover them well with Blankets, in order to keep up their Perſpiration. However, if the Houſe where the Cattle are kept be at any conſiderable

Diſtance from this Hovel, the ſafeſt Way will be to remove it to the Place where it is wanted. This may be done by placing it on two Axle-trees, each furniſh'd with two Wheels, by which means it may be drawn to any Place, as there may be Occaſion; and the Trevets, Pans, and Grate being brought along with it, nothing remains to be done but to dig a Pit, and to fix the Hovel over it. Thus the Structure propoſed will not only ſerve one Village, but ſeveral, as it may be carried to every Place in the Neighbourhood.

THE Cupping-Glaſſes, of which we have ſhewn the Advantage, are ſtill leſs cumberſome and leſs expenſive: So that the Remedies we propoſe are ſo far from being morally impracticable, as ſome Perſons have thought fit to inſinuate, that, on the contrary, no Scheme has yet been offer'd ſo eaſy and advantageous, either with reſpect to the Execution, or the ſmall Expence it requires.

FINIS.